



### value propositions

- Increased volume and improved porosity enhance consumer appeal.
- Reduced mix time improves process efficiencies and product costs.
- Increased water absorption improves production yields, as more bread can be made with less dry ingredients.
- The above benefits can be achieved while maintaining a clean label, consistent with traditional artisan bread formulations.

### objective

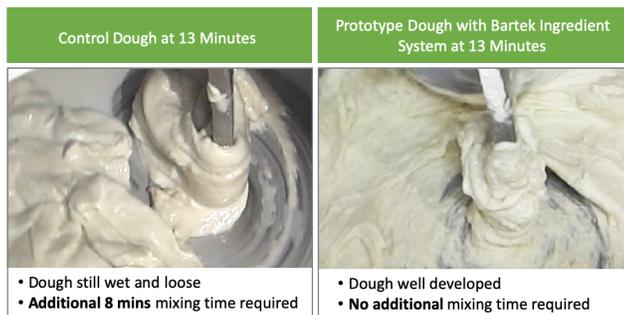
Enhance the properties of select artisan bread formulas relevant to the modern bakery market, to aid in their adoption at an industrial scale, by incorporating patent-pending, fumaric acid-based, ingredient systems.

### approach

#### Screening and Selection

- Bartek enlisted the help of Wheat Marketing Center\* to define the most relevant formulations for exploring the benefits of novel ingredient systems as clean-label enhancers in artisan breads.
- Ciabatta and baguette breads were chosen for the study, and formulas relevant for both artisan and industrial bakers were selected.
- Key properties such as processability, porosity, volume, shape and overall eating quality were studied.

FIG. 1: Comparison of Ciabatta Doughs



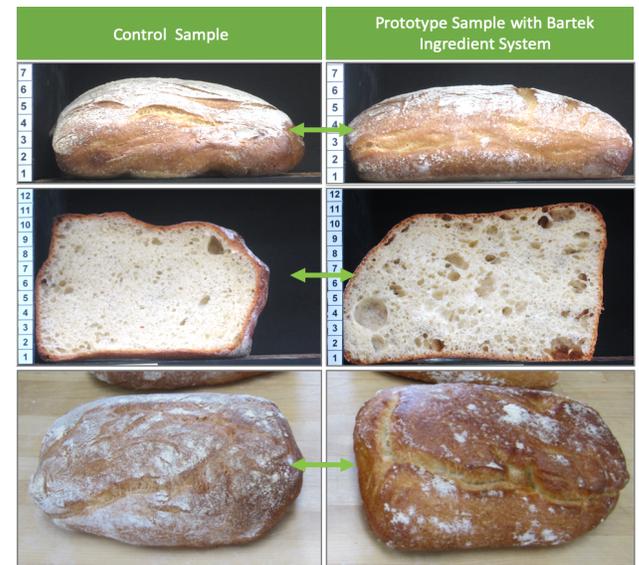
### results

The key properties for ciabatta and baguette breads prepared with Bartek's ingredient systems versus control samples without the system were conducted. Several key advantages were observed.

#### Case Study 1: Ciabatta

- Mix time was reduced by approx. 35% using Bartek's ingredient system compared to Control (FIG. 1).
- Bartek's system delivered a finished bread with added volume, a more open, porous crumb structure, and a more even shape (FIG. 2).
- The system also delivered a more rounded, subtly complex flavor and aroma, along with a less dense, quick dissolving texture.

FIG. 2: Comparison of Finished Ciabatta Breads



\*The Wheat Marketing Center is a leading bakery technology research institution based in Portland, Oregon.

## results (cont'd.)

### Case Study 2: Baguette

- Water absorption was significantly increased using Bartek's system, allowing for 2% more water to be added to the dough.
- Both dough samples behaved similarly during mixing and throughout the rest of the process (FIG. 3).
- Even with 2% more water, Bartek's system delivered improved volume, a more even shape with better rounded ends, and a more open, porous crumb structure than the Control (FIG. 4).
- Flavor and aroma of the Bartek sample were more rounded and subtly complex, while texture was less dense and quicker dissolving.

FIG: 3: Comparison of Baguette Doughs

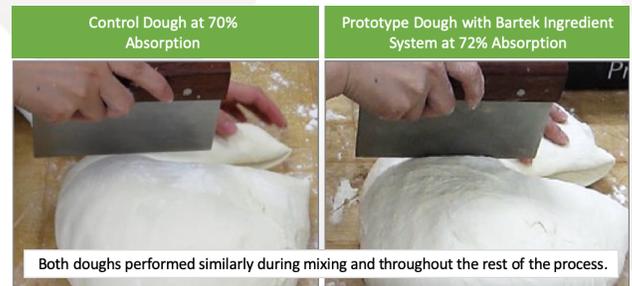
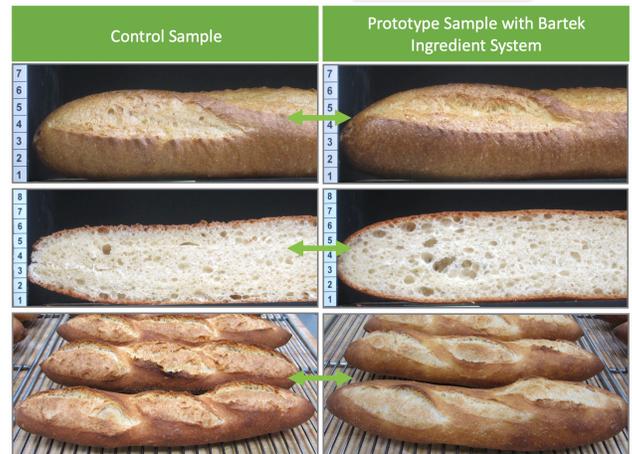


FIG: 4: Comparison of Finished Baguettes



## key take-aways

- In artisan bread production, using Bartek's patent-pending, clean label ingredient systems to reduce mix time is extremely beneficial to bakers for **increasing processing speed, improving cost and production efficiencies, and reducing bottlenecks in industrial baking.**
- Increasing water absorption in dough allows bakers to improve productivity and save ingredient costs by **enabling more bread to be made with less dry ingredients.**
- Even with more water added, Bartek's system provides improved volume, porosity, sensory characteristics and overall appearance, all which combine to **deliver significant savings for the baker and a more pleasant eating experience for the consumer.**